



**University of
Zurich^{UZH}**

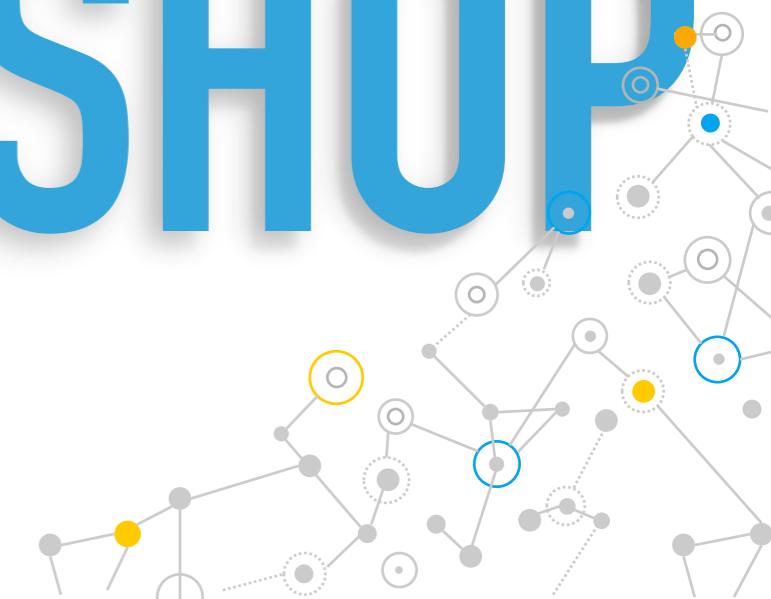
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ECVPH WORKSHOP, ZURICH 7-9 MAY 2019

<http://r-bayesian-networks.org/>
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ECVPH WORKSHOP



INSTRUCTORS



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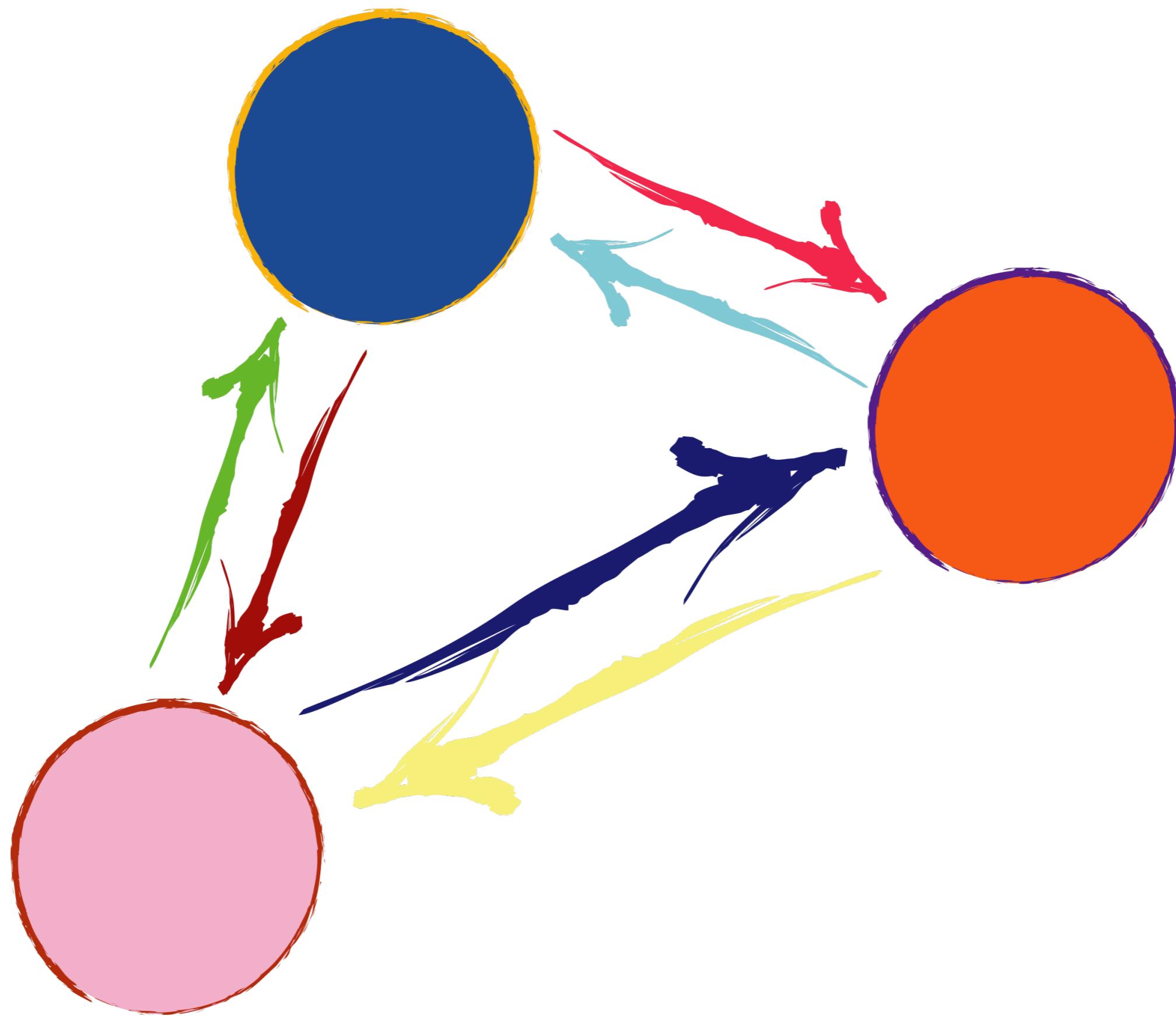
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ROUNDTABLE



INTERACTIVE WORKSHOP



HOUSEKEEPING INFO

- two coffee breaks per day
- lunch: mensa, coop, Oerlikon HB



WORKSHOP ORGANIZATION

Objectif of the workshops:

- ▶ To understand the basic theory behind structure discovery and Additive Bayesian Networks modelling
- ▶ To learn how to set up, analyse, interpret and report an Additive Bayesian Network model for multivariate analysis of animal health data using the R package abn
- ▶ To develop a toolbox from machine learning for risk factor analysis that is theoretically sounding and practically adapted
- ▶ To learn more about alternative methodologies coming from machine learning such as RandomForest, ensemble methods, bootstrapping

WORKSHOP ORGANIZATION

Resolution: 1280x1024 px ~ Free Photoshop PSD file download

Spirit of the workshops:

- ▶ Reproducible research
 - ▶ Open access material (data, paper, code)
 - ▶ Objective: put a redo button under each figures
 - ▶ State-of-the-art softwares
 - ▶ R, JAGS
 - ▶ Dynamic reporting: Rmarkdown, github (pages)



<https://gilleskratzer.github.io/ECVPH/>

WORKSHOP ORGANIZATION



History

- ▶ R is based on the S programming language
- ▶ R was created by Ross Ihaka and Robert Gentleman at the University of Auckland (New Zealand) 1995
- ▶ First stable version: 2000



Features

- ▶ Interpreted language
- ▶ Many of R's standard functions are written in R
- ▶ Advanced users can write C, C++, Java, .NET or Python code to manipulate R objects
- ▶ R is highly extensible through user-submitted packages

WHY R/RMarkdown

- ▶ Good science needs **altruistic** scientists
- ▶ Reproducible research needs **extremely well organised** scientists

<https://CRAN.R-project.org/package=abn>

- ▶ Lets use infrastructure that simplifies our life



SCHEDULE

DAY 1

- ▶ Morning
 - ▶ Welcome
 - ▶ Talk on ABN euthanasia paper
- ▶ Afternoon
 - ▶ Check installation R, Rstudio, RGraphiz, INLA
 - ▶ Hands-on: Descriptive stats with the data sets
 - ▶ Create DAG and plot it in RGraphiz
 - ▶ Theory on glm and lm (regression models)

SCHEDULE

DAY 2

- ▶ Morning
 - ▶ Intro machine learning techniques (randomForest, bootstrapping, stepAIC)
 - ▶ Risk factor analysis with salmonela outbreak
- ▶ Afternoon
 - ▶ Introduction to ABN methodology
 - ▶ Data simulation and first analysis

Social event: let us have a beer!
18h apéro - 19h dinner

SCHEDULE

DAY 3

- ▶ Morning
 - ▶ ABN analysis with ADG dataset
- ▶ Afternoon
 - ▶ Analyse your own data
 - ▶ Advanced modelling features
 - ▶ Wrap up discussions

Thank you for your attention

